



Successful retrieval of metal post using ultrasonics and nonsurgical retreatment of maxillary central incisor: An 12 month follow-up case report

Ashique M¹, Elizabeth Prabha James², Jayasree S³, Sruthipoornima¹, Ajeesh K¹

¹ Junior Resident, Department of Conservative Dentistry and Endodontics, GDC Calicut, Kerala, India

² Associate Professor, Department of Conservative Dentistry and Endodontics, GDC Calicut, GDC Calicut, Kerala, India

³ Professor and HOD, Department of Conservative Dentistry and Endodontics, GDC Calicut, GDC Calicut, Kerala, India

Abstract

Removal of different materials from the root canal in a failed endodontic treatment is a prime requisite for endodontic retreatment. Complete removal of the materials such as gutta percha, broken instruments, or post is of particular importance for accessing endodontic space, cleaning, shaping, and disinfection of the root canal. Intra-radicular post removal poses a challenge to the clinician with associated risks. The purpose of this case is to report successful removal of metal post and non-surgical retreatment of a maxillary central incisor. This case report discusses the clinical management of previously root filled maxillary central incisor along with metallic post focuses on removal of the metal post and endodontic retreatment of the maxillary incisor with ultrasonics and non-surgical management using intracanal medicament to enhance the longevity of the tooth.

Keywords: successful retrieval, ultrasonics, maxillary central incisor

Introduction

Nonsurgical repeat root canal treatment in endodontics is an extensive area which includes dismantling the crown, exploring and identifying canals that are missed in previous endodontic treatment, gutta percha removal, managing obstructions, negotiating blocks, perforation repair, bypassing ledges, fractured tooth treatment planning and retrieving radicular posts and separated instruments.³ Endodontic retreatment of the teeth with intra-radicular posts is usually a difficult situation for clinicians, increasing the risk of perforations, fractures and weakness of the remaining structure of the teeth ^[1, 2]. Removing such posts is performed with different methods and instruments including the Masserann technique, pivots-extracting forceps post excavator, post puller, Gonon extractor and other techniques using the rotary instruments or ultrasound ^[3, 4, 5]. Ultrasonic instruments have some advantages such as decreased prevalence of tooth fractures and perforations. These instruments especially are effective when zinc phosphate or glass ionomer cements are used. this case report emphasizes the clinical approach to successful removal of metal post and subsequent retreatment of maxillary central incisor with minimum armamentarium.

Case Report

A 45-year-old male patient reported to the Department of Conservative Dentistry and Endodontics complaining of pain in the upper front teeth region. On clinical examination, restoration was found with respect to 24, 25 and crown with respect to 11, which was tender to percussion. Patient gave History of Fall while riding bicycle 30 years back. Anterior tooth was endodontically treated then. Patient was asymptomatic till a month ago on radiographic examination, there was inadequately obturated canal of 11 and a post underneath the crown associated with large periapical radiolucency [Figure 1]. After thorough clinical and radiographic examination, treatment was planned and decision was taken for post retrieval and nonsurgical retreatment. Procedure was explained to the patient with possible risks including the fracture of tooth during post removal, before commencing the treatment and informed consent was obtained. Treatment was initiated with crown removal of 11. Access cavity was modified and space was created by removing the restorative material in and around the post using number 2 round bur. On clinical examination, it was found that the post was not placed in a right angulation. Tapered diamonds were used to refine in gentle brushing movement and also to remove roughness, giving flaring along the walls axially to accomplish the modification in access cavity shape to gain adequate space around the post for easy removal. Restricted space between the post and the axial was instrumented using ultrasonic tips (ED 4D, ED5: DTE D5 Guilin Woodpecker Medical Instrument Co., LTD.), which are meant to be used for these purposes. Principally, ultrasonic instrument which is parallel was made use of below the orifice level and lateral to the radicular post.]. Complete removal of the restorative material, orifice enlargement, and

the use of ultrasonics lead to loosening of the post, which was removed using small artery forceps with anticlockwise rotation and gentle pull motion [Figure 2].



Fig 1



Fig 2



Fig 3

The patient was recalled after 2 weeks of intracanal medication and with the absence of symptoms the obturation was completed and the crown buildup was done using a fiber post and with composite [Figures 3 and 4].and

aesthetic rehabilitation using zirconia crown was done [Figures 5]. Patient followed for 1 year and complete resolution of periapical lesion was observed



Fig 4a



Fig 4b



Fig 5a: after post removal



Fig 5b: after core build up



Fig 5c: after crown

Discussion

Nonsurgical repeat root canal treatment in endodontics is an extensive area which includes dismantling the crown, exploring and identifying canals that are missed in previous endodontic treatment, gutta percha removal, managing obstructions, negotiating blocks, perforation repair, bypassing ledges, fractured tooth treatment planning and retrieving radicular posts and separated instruments ^[6]. Prior to any treatment procedure, considering the available options for the given condition and choosing the best for the clinical scenario is vital. With the best option of nonsurgical retreatment endodontics in this case, the aim was to regain the access into the radicular pulp chamber, retrieve gutta percha, and post from the root canal chamber space and if there was any obstructions, defects that are pathologic or iatrogenic in origin were intended to be repaired ^[6]. After the procedures of coronal disassembly, reshaping cleaning of the radicular pulp chamber is done and the tooth is three-dimensionally obturated ^[6]. Intraradicular posts used most commonly are prefabricated metal posts. They can be cylindrical-conical, screw, or cemented with a circular cross-section. Their radiopacity is similar to gutta percha and fixing cement and they have a module of elasticity different from that of the dentin. Intraradicular metal posts may produce tension, while in the active points, overload arises in the course of the thread leading to a risk of root fracture ^[7, 8]. Several various factors impact removal of the post, such as decision of the operator, ability, experience, choosing with using the best available technologies and method to be used plays important role. To a greater extent, the operator's knowledge of internal and external anatomy, familiarity of variations in the internal anatomy of root canal associated with each tooth is essential. Furthermore, knowledge can be attained by different angulated preprocedural treatment radiographic evaluation which can aid in determining the length, extension, and diameter with the angle of the radicular post. Intraradicular posts retained, screwed, and micromechanical bonding into the radicular chamber with resin composite or chemical bonding with glass ionomers poses difficulty in retreatment procedure ^[6]. Post removal can be performed by various commercially available systems such as Masserann's kit, post removal system, endodontic extractors, ultrasonics, and a combination of tube extractors with cyanoacrylate. Abbott reported that post removal is a predictable procedure, if appropriate techniques and devices are used. He advocated the use of Masserann's kit, ultrasonics, Egger post removal, and unscrewing of the threaded screw posts ^[9]. In the present case, we were not at disposal of any magnification device such as endodontic microscope or any modern equipment such as Masserann's kit. Hence, conventional ultrasonic tips were used followed by the use of wrench and artery forceps for unscrewing the posts. Lack of modern equipment presents the case with a higher challenge but allows a clinician to innovatively think and treat the case with the available equipment. Within the limitations, with minimum equipment, the post was removed for successful nonsurgical retreatment to alleviate the pain and eliminate the periapical infection. Conclusion Successful post removal is possible only if there is proper operator judgment, training, experience, and most importantly the clinician's ability to use the available instruments in a clinical setup. Clinicians need to weigh risk versus benefit for every treatment decision that is made so they may best serve the patients who entrust them with their care.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed. Financial support and sponsorship Nil. Conflicts of interest There are no conflicts of interest.

References

1. Dixon EB, Kaczkowski PJ, Nicholls JI, Harrington GW. Comparison of two ultrasonic instruments for post removal. *J Endod*,2002;28:111-5.
2. Gomes AP, Kubo CH, Santos RA, Santos DR, Padilha RQ. The influence of ultrasound on the retention of cast posts cemented with different agents. *Int Endod J*,2001;34:93-9.

3. Garrido AD, Fonseca TS, Alfredo E, Silva-Sousa YT, Sousa-Neto MD. Influence of ultrasound, with and without water spray cooling, on removal of posts cemented with resin or zinc phosphate cements. *J Endod*,2004;30:173-6.
4. Brito M Jr, Soares JA, Santos SM, Camilo CC, Moreira G Jr. Comparison of the time required for removal of intraradicular cast posts using two Brazilian ultrasound devices. *Braz Oral Res*,2009;23:17-22.
5. Berbert A, Filho MT, Ueno AH, Bramante CM, Ishikiriyama A. The influence of ultrasound in removing intraradicular posts. *Int Endod J*,1995;28:100-2.
6. Ruddle CJ. Non-surgical retreatment: Post and broken instrument removal. *J Endod*,2004;6:1-23.
7. Ruddle CJ. Microendodontic nonsurgical retreatment in: *Microscope in endodontics*. *Dent Clin North Am*,1997;41:429-54.
8. Schilder H. Cleaning and shaping the root canal. *Dent Clin North Am*,1974;18:269-96.
9. Schilder H. Filling root canals in 3 dimensions. *Dent Clin North Am*,1967;11:725-44.